THE OPTICAL MAGIC LANTERN JOURNAL
AND PHOTOGRAPHIC ENLARGER
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CONTENTS.

PAGE
Notes 105
"Accidental" Lantern Slide 107
Shadowgram or Silhouette Slides for the Optical Lantern .. 107
Acetylene for Lantern and Enlarging 109
Lantern Slides from Line Subjects 110
Behind the Operator 111
Negatives for Enlargements and Lantern Slides 112
New Apparatus 113
Correspondence 114
Patent Intelligence 115
Notes and Queries 116

NOTICES.

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NOTES.

Notice.—The directors of the Magic Lantern Journal Company, Limited, wish us to announce that the October number of this Journal will be a special one, and that it is the intention of the management to circulate that number freely both at home and abroad, by which means it is expected to enlist a huge number of extra regular subscribers. If readers in the British Isles will send in the names of their friends abroad who take an interest in lantern matters, a copy will be sent to them. Personally, we would ask dealers and manufacturers of apparatus to let us have particulars of such novelties as they intend introducing this season, as soon as possible, so that such may be included.

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New Gas Jets for Lanterns.—For a long time past Mr. Edmund H. Wilkie, who needs no introduction to our readers, has been experimenting in the jet line, and we learn that his experiments have been so successful in this direction that he intends introducing one to the public under the name of the Solar Mixed

Jet. Another form of jet for using gas from the main and oxygen from cylinders, is about to be brought out by Mr. Bonneville, and we hope to have something to say about these forms in our next issue.

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Aintree Photographic Exhibition.—The sixth annual photographic exhibition in connection with the Aintree Photographic Society will be held at the Institute from November 21st to 25th. Full particulars may be obtained from the Hon. Sec., Mr. J. Herbert Rigby, Elton, Aintree, near Liverpool.

◆ ◆ ◆

Hand Camera Users.—Mr. Jas. Ross, in writing to an American contemporary, holds the following opinion respecting the amateur photographer of the present day. He says:—"To the bulk of those who use them, all hand cameras are more or less alike, and they try to do with a five dollar instrument and lens working at F 16 what would require a Planar at ½ 3·6 working over 16 times as fast."

◆ ◆ ◆

Open-Air Lantern Exhibition at Swanage.—An open-air lantern entertainment was given in Shore Road, Swanage, last month. The connective parts were very ably given by the Rev. T. A. Gurney, and the Rev. P. MacDonald manipulated the lantern. The subject was "Blind Bartimæus." The entertainment attracted a large number of residents and visitors, who had the double advantage of listening to the lecture, seeing the pictures, and enjoying the sea air at the same time.

◆ ◆ ◆

A Paris Exhibition Novelty.—One of the novelties which is now being prepared for the Paris Exhibition is a species of automatic photo-weaving machine. The customer drops a coin in a slot and remains stationary at a given spot until the exposure is made, this being signalised by the stroke of a bell. In about a quarter of an hour the machine will, it is said, deliver a pocket handkerchief to the sitter, on one corner of which will be found his photograph woven into the material.

◆ ◆ ◆

Photographing a Person's Stomach.—In Chicago the doctors, in diagnosing a case, made the patient swallow an india-rubber bulb covered with a sensitised photographic film, which was then blown out until it filled the stomach. An X-ray photograph was then taken, the bulb emptied, and withdrawn. On development a good photograph of parts of the walls of the stomach was secured, revealing, it is stated, the presence of a large tumour, which was finally operated on with success. In order the better to demonstrate to the assembled students, the film was cut in sections, lantern slides made therefrom and projected on a screen.

◆ ◆ ◆

Death of Professor Bunsen.—On the 16th ult., the death of Professor Robert Wilhelm Bunsen took place at Heidelberg. He was a well-known scientist, and made many important researches and discoveries in chemical science—amongst them being an antidote to arsenic, the magnesium light, discoveries in spectrum analysis, and the well-known Bunsen burner, where by the admission of air along with gas we are enabled to produce a flame of low luminosity but great heating power, a system now in use in most households in one form or other. Professor Bunsen has had a busy life, and attained the age of 88 on March 31st last.

◆ ◆ ◆

The Late Canon Beechey.—Canon Beechey, who died a few days ago at the advanced age of 93, took a prominent place some years ago amongst lanternists, and in connection with the apparatus itself he brought out several inventions. His Trinoptric lantern at the time created quite a sensation, for with it effect slides could be shown with one illuminant, there being, of course, two sets of objectives, etc. An illustration of this peculiar form of lantern will be found on page 127 of this Journal for August, 1897, and an interesting article upon the subject by Mr. Beechey himself will be found on our pages in the October, 1897, number of this Journal. Notwithstanding his advanced age, he was, until quite lately, able to journey from his home in Norfolk to London alone.

◆ ◆ ◆

Novel Method of Getting People to Church.—On Saturday evening the passer-by at St. Mark's Church, Kennington, beheld a huge lantern screen stretched between the pillars in front of the church. Here, by means of limelight, several views illustrative of the life of Christ were projected, the clergyman meantime giving a brief address. After the singing of a hymn, the audience, which by this time amounted to several hundreds, were invited to come into the church to a service.

"Accidental" Lantern Slide.

By **HARRY LEADBETTER.**

THE ways and means for the production of lantern slides have wakened the interest of many writers on subjects pertaining to lantern matters, and writings have appeared with regularity from January to December, year after year, in the pages of the OPTICAL MAGIC LANTERN JOURNAL since the first number was published.

That those produced photographically, wet or dry, are the commercial article goes without saying. On the other hand, many interesting slides with the *modus operandi* of getting them have from time to time been explained, and have been put into practice with satisfactory results to the enthusiasts trying them. Diagrammatic, and some few technical slides for better demonstrating the science of floriculture may be mentioned as examples; the ways and means of making these being extremely simple, and their demonstrating value unquestionable.

That such slides owe their origin accidentally to a single thinker there is no doubt, because, chiefly, they have not **suffered change.**

But, again, it can be argued that a production that comes about by accident as it were, sometimes forms but a basis or standpoint for others to enlarge upon. And when this is so, so much greater must be the satisfaction to the individual who first devised and suggested.

Force of circumstances has many times created for us something new, and few are the experienced lanternists and lecturers who have not at some time or other had occasion to invent some new dodge—if the word may be here applied—to better drive home his meaning. Supposing his dodge succeeds, and he be an unselfish mortal, he at once becomes a philanthropist and communicates his discovery to others.

One of the most absurd slides of the accidental class that has come under my notice, made itself only the day before yesterday, but to be precise, was squeezed between a couple of cover glasses the night before last.

My favourite reading lamp has what is considered a beautifully engraved glass globe, measuring some 27 inches in circumference. Unluckily this had a knock on the day above mentioned, resulting in two or three cracks of 2 inches in length.

How to save the specimen of glass engraving from further disaster was a puzzle. Every conceivable remedy was thought of, to no purpose. So until advice could be got, and to save the cracks from going further, I stretched a sheet of goldbeater skin (the whitest I could find) well over the damaged part, which when dry was almost invisible. Deceiving myself that I had made a good job of it, I lighted up in the usual way. Half an hour passed, nothing happened. Shortly after, however, I was startled at something falling between my face and the lamp on to the writing pad that lay in front of me. The skin had peeled off on being subjected to the heat, and I found upon it, to my surprise, an indelible imprint of the glass engraving.

"Lantern slide curio," said I, as I bound it between two cover glasses. Every line, flower, and leaf are well defined. The lights are not quite so clear, and the shadows a little deeper than in the glass. This will be understood when considering the slight opaqueness of the skin.

When I have made some further experiments with this funny film, I will perhaps communicate further. In the meantime I am sending the Editor, Mr. J. Hay Taylor, a strip of skin, untouched and just as it fell from the globe.

Shadowgram or Silhouette Slides for the Optical Lantern.

By **THEODORE BROWN.**

SEE-SAW.—No. VIII.

All the slides here described are of new and original construction, working models of each having been made and tested before publication by the author. Manufacturers will therefore find them to be thoroughly practicable, and if they desire to make them for the market they are at liberty to do so, providing a sample is sent to the inventor by way of acknowledgment.

THIS slide is most effective as, apparently, there is no motive power whatever. All that is seen is a log of wood and a long board, with a boy at each end, balanced thereon. Another boy stands in the middle and completes the whole scene, and yet the boys go up and down and balance themselves in a very realistic manner. There are two principles employed in the construction of this interesting slide. One is the principle of male and female blocks, described in the last slide of this series, and the other depends upon the fact that slides for the lantern are always inserted upside down, the action of the lens righting the view on the screen.

CONSTRUCTION.—Two glasses, one fixed and the other movable, are fitted into the usual wooden framework. On the fixed glass is fastened a round block G, Fig. I. To this block the see-saw is pivoted at F. It is regulated by the extending rod B, in which a small slot is cut. On the board are pivoted in their proper places the figures C, D, and E; E and D are constructed in exactly the same manner, so a detailed description of one will be sufficient. The body is pivoted to the board, and to the body is pivoted the head. The points where the parts are pivoted are clearly shown in the drawing, so that particular reference is unnecessary. Now the lower part of the body—the legs, etc.—is pivoted to the board in close proximity to the upper part of the figure. This part is pivoted in such a manner that when it swings it will be prevented from going too far by touching the lower part of the body, or the pins at L and M, fixed in the board.

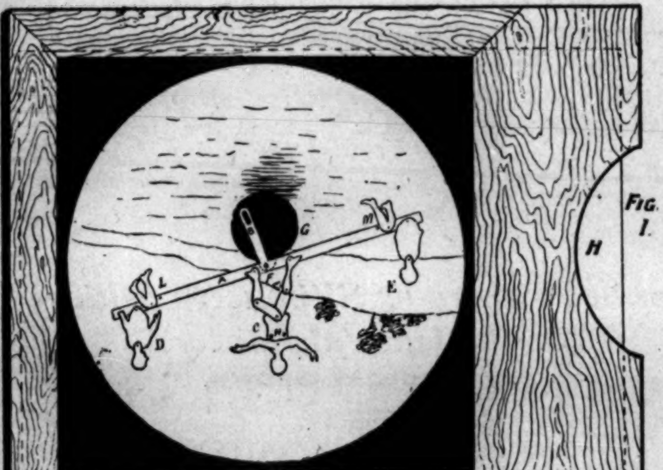


FIG. I.

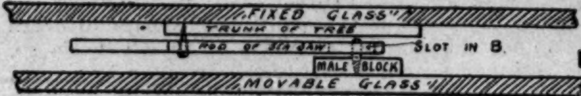


FIG. 2.

C, the middle figure, is pivoted at six different places. Both the feet are pivoted to the board, the lower part of the legs to the thighs, his thighs to his body, and, yet again, the head and arms to the body. It should be noted that the head and arms are cut out of one piece of material, and, when they swing, are prevented from getting too far out of position by two little pins fixed in the body at N, Fig. I.

Fig. II. shows a sectional view of the working parts of the see-saw. It must be borne in mind that when the slide is inserted in the lantern, each part will fall to its perpendicular, owing to the laws of gravity. Then, when the see-saw is made to move up and down, new perpendiculars will be, of course, assumed by them. It is this "assumption of new perpendiculars," or change of "perpendiculars," that causes the life-like movements of each figure.

Now we must consider how best to cause the movement of the see-saw. The principle of male and female blocks, before mentioned, is used to accomplish this.

On to the back of the movable glass H, Fig. I., is fastened a small male block, furnished with a pin working in the slot B. Thus, when the glass H is pushed in and out, the rod B, with the see-saw attached to it, will be pushed over and pulled back by the action of the male block. Being pivoted at F, the result will be the up-and-down motion peculiar to the see-saw.

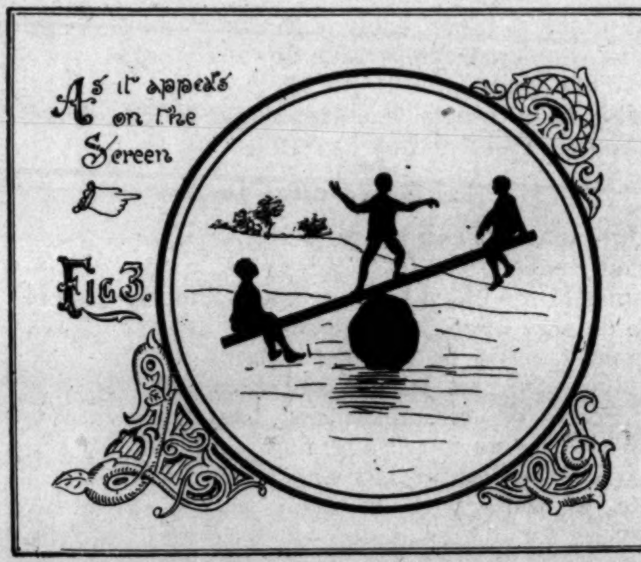

As it appears on the Screen

FIG 3.

If the glass is not pulled out too far, or if the slot is not made too long, the force which causes the movements will be entirely hidden from the audience by reason of the opacity of the large block on which the see-saw is fixed.

A few lines drawn on the fixed glass will complete this slide, and its exhibition will undoubtedly be received everywhere with great interest.

Acetylene for Lantern and Enlarging.

THE various kinds of lighting hitherto employed for enlarging and projections are in a decreasing order; electricity, oxygen mixed with gas, ether or petroleum, gas alone, petroleum. In permanent installations a light is employed in the absence of electricity, with oxygen as base. Oxygen is somewhat expensive, and besides requires a rather complicated apparatus, in consequence of which it is rarely employed by the amateur photographer, who not having to illuminate big screens usually adopts petroleum or gas. Certainly this light does not give him perfect satisfaction, but as there is nothing better he does not complain.

Like most amateurs I had utilised coal gas, but owing to several accidents I determined to change my system of lighting, and made some experiments with acetylene. For such experiments it is well, firstly, to investigate the degree of safety of the luminous sources placed in competition, and we have all the elements of comparison.

We know that petroleum, both in the state of lamp oil and of spirit, has caused and causes daily accidents which are often fatal, due, it is true, as much to the carelessness of consumers as to the dangerous character of this mineral oil. The misdeeds of coal gas are so common that we need not mention them. The oxy-hydrogen, oxy-calcium, and **oxy-ether lights** all require great precautions. Everything considered, acetylene presents fewer chances of explosion than some of the enumerated systems of lighting, and it is not more dangerous than the remainder.

For example, the admixture of oxygen and hydrogen, which gives the brilliant and hot Drummond light, demands great care. Explosions of oil cans caused by carrying a light in their vicinity occur daily, as with coal gas, so that comment is needless. Certainly acetylene is not free from these dangerous characteristics, but it reveals its untimely presence by a peculiar odour which warns of danger. Thus the new gas gives a sufficient number of guarantees to justify its admission into the photographer's studio.

If from the point of view of safety, acetylene does not leave the other styles of lighting far behind, such is not so as regards quality and intensity of flame. With coal gas all the rays of light are not utilised; the flame almost reaches the top of the glass protecting it, and we know that in a magic lantern the only useful light is that near the axis of the lenses. It is for this reason that one seeks before all else a powerful source of light with the smallest possible area. Acetylene beneficially fulfils this important condition.

For projection a row of five burners can be employed, giving 150 litres of acetylene per hour, which is equivalent to a minimum of 20 carcels. The burners are situated one behind the other like the multiple burners of the petroleum lamp; owing to this arrangement the flame is not high, all the light being concentrated at a slight distance around the optical axis. For requirements of an amateur lanternist a row of three burners, 30 litres each, amply suffices. With the 12 carcels thus obtained a sufficient light can be projected over a circle of 1 metre in diameter. The pictures are brilliantly illuminated. Their dimensions could be enlarged, but it is sufficient if we consider that the amateur will have a limited number of spectators, and that the ordinary dimensions of our rooms hardly admit of having the necessary retreat to cover a **larger surface.**

On the other hand, the three burner row gives a luminous power, which when enlarging allows of considerable shortening of the time of exposure. Even failures are to be feared unless somewhat dense negatives are employed. With a five burner row exposure would be too much curtailed, and results would not be good on account of the very rapid printing of the sensitised surface.

It being granted that we seek before all else a great luminous power during a relatively short time, no other apparatus seems so fitted for this style of work; besides, management is most simple, and when full there is no fear of a dangerous amount of gas, provided, of course, the operator is prudent. A point not to be neglected is the cheapness of this valuable apparatus, which will contain 750 grammes of carbide producing 225 litres of acetylene, which represents more than two hours' burning for three burners. In fact, with the lantern, and particularly in enlarging, the time of work is little more than an hour, and it is not necessary to completely fill the metal basket with carbide.

In addition to better light, expenses are less with acetylene. Certainly oxy-calcium, oxy-hydrogen, oxy-ether, and electric lights are more powerful than acetylene, but they are very expensive. On the other hand, it is useless to make a comparison with petroleum, which gives a relatively feeble light of dubious quality. Comparison is only practical and interesting between acetylene and coal gas. To obtain the 20 carcels mentioned above—obtained by the horary combustion of 150 litres of acetylene—a minimum of 2,000 litres of coal gas have to be consumed. The 150 litres of acetylene gas are obtained with 500 grammes of calcium carbide at a cost of 65 centimes per kilogramme, *i.e.*, 32½ centimes. The average value of 2 metres of coal gas is 60 centimes; whence an economy of 27½ centimes per lighting hour.

To demonstrate the superiority of acetylene, we (*Le Journal de l'Acetylene*) must mention the enormous heat which the 2 metres of gas would give required for the carcels in the narrow limits of a magic lantern. We could find other arguments make other comparisons to the advantage of acetylene. Amateur photographers, without doubt, will wish to ascertain by experiments that the new easily made gas is more economic, and just as safe as its predecessors. Once convinced of this, lanternists will have no other light than this, the discovery of which should be regarded as a God-send for the art of photography.

Lantern Slides from Line Subjects.—No. 1.

By **G. E. BROWN.**

THE opening of the lantern season is a reminder of how invaluable an aid the camera is to the lanternist—for the making of slides from book illustrations, engravings, etc., if for no other purpose. Perhaps it is not too much to say, that from the point of view of the practical lanternist, the ability to do justice to the reproduction of such subjects as these in lantern slide form is of greater service than a knowledge of the technique of slide making direct from landscape negatives. At any rate, among lecturers and lantern entertainers the slide from a wood-cut is often preferred to a photograph in point of appealing instantly to the audience; and bearing in mind the extraordinary profusion of illustrated books and magazines at the present time, no one who has a camera and the skill to use it need complain of their stock of slides palling from continual usage.

The making of negatives and positives from line subjects does not come to every photographer from his own inner consciousness. There are points requiring attention all along the line—trifles, the sum total of which means a black and brilliant slide upon the screen. It is often asserted that the wet plate process must be used for the best results, and *au contrarie*, that gelatine will give equally good negatives. However this may be, my own experience with gelatine and collodion—not, indeed, wet plate, but dry collodion plates of commerce—leads me to much prefer the latter, and I am surprised that more notice has not been directed to them.

I need not say much about the apparatus for copying, nor the source of illumination. The former must consist of a board with an easel at one end and a sliding support for the camera. This can be bought at a low figure or easily made. In regard to the latter, artificial light is on the whole preferable to daylight, whenever it is possible to use it, for the sake of its constancy and ease of control. Two incandescent burners on either side the easel, and a few inches from it, give an almost perfect illumination for small pictures. They should be provided with tin-plate reflectors, blacked on the reverse side, so that the lens is shielded from direct light. The negatives will naturally be of ¼-plate size, but notwithstanding this, it is a

distinct advantage

to use a larger camera, for the reason that light reflection from the bellows to the plate is thereby avoided. For lens, an R.R. covering well at *f* 8 is necessary, or better, one of the stigmats which work at *f* 6, such as Cooke's, stigmatic, or the anastigmats of Zeiss & Goerz. A fine focusing screen and a magnifier are aids to sharp definition, which it is wise not to neglect. The parallelism of the easel and the ground glass is, of course, very important, and if the best use is to be made of the superbly flat field covered by the stigmats, is a point which must be looked to.

Coming now to the plate, the collodion plates referred to above are manufactured by the Dry Collodion Plate and Film Company, Limited (to give them their full style and title), of Stechford, near Birmingham. Several brands are made, among them landscape, photo-mechanical, and lantern. My experience has been confined to the two latter for negative and positive work respectively. Once the susceptibilities of the plates have been recognised, the user will have no difficulty with them; but to treat them in the rough and ready fashion possible with gelatine is not to be thought of. When dry, the collodion film is more easily damaged than gelatine. When wet it is extremely tender, and a touch with the finger, cotton wool, or brush, is enough to rub off the film. Care must, therefore, be exercised in removing the plates from their package. It is best to remove the whole dozen carefully to a grooved plate box, rather than to keep extracting from and replacing in the wrappings. In return for the care demanded, they present several positive advantages. They can be developed to a thin image (or over-developed and reduced) with clear lines, and the ground then intensified to almost any extent without the lines choking. They require little washing after fixing and other operations; in fact, by using hot water the process occupies only a few minutes. They can be dried in a few seconds before a fire.

The photo-mechanical plate is, of course, a slow plate, rapid enough for any kind of daylight copying, and under suitable conditions, for use by artificial light. I find that with a couple of incandescent burners and a lens working at *f* 6 (or to speak by the card, at rather less than this, about *f* 8, due to the extension of the focal length), exposures run to about 20 to 40 seconds for black and white subjects. Photographs require much more, but for these I prefer a gelatine plate. The landscape collodion plates would, I have no doubt, lend themselves to black and white work with suitable development and after-intensification, and would allow exposures by artificial light with less rapid lenses.

Development is done just as with dry plates. The makers recommend a pyro-soda formula, as follows:—

Soda sulphite ..	1 ounce ..	50 gms.
Soda carb. (cryst.) ..	1 ,, ..	50 ,,
Water	20 ounces ..	1,000 ccs.

To each ounce of this solution add 1 to 2 grains of dry pyro. Personally, I prefer either of the two following developers:—

GLYCIN (Single Solution).

Glycin	40 grains ..	9 gms.
Soda sulphite ..	120 ,, ..	27½ ,,
Potass. carb. ..	200 ,, ..	46 ,,
Potass. bromide ..	5 ,, ..	1 ,,
Water	10 ounces ..	1,000 ccs.

HYDROQUINONE-FORMALIN.

Hydroquinone ..	65 grains ..	15 gms.
Soda sulphite ..	650 ,, ..	150 ,,
Formalin	70 mins. ..	15 ccs.
Water	10 ounces ..	1,000 ,,

Both these developers, though slower in action than the pyro-soda, give good density, whilst keeping the lines clear withal. Plates can be left in them without fear of any appreciable over-development.

(*To be continued.*)

Behind the Operator.

By F. PICKETT.

A THOUSAND pities is it that the surroundings of the lanternist are for the most part what they are. I would infer that in nine cases out of every ten the operator is so positioned in the school-room, lecture hall, or wherever the show is given, that he is laid bare to the banter and silly-twaddle-talk of a given few, whose chief purpose in attending appears on the face of it to be to annoy and to ridicule. The all-important advice, "keep cool," is very well in its way, but such advice at times, even to Mr. Steadyhead, is but a complex paradox.

As a rule the lantern is planted in the centre of a crowd; as a rule, too, specially in small buildings, the man who works that lantern has no more room allotted him than a sentry has in his box. He can't help overhearing much of the conversation that goes on around, and which not infrequently is aimed at him. If he drops a pair of pliers during preparation he is laughed at, and when the signal is given to roll up the curtain, some clever youth whistles at him, or, "look alive, governor, we're waiting"—and you tell him to "keep cool." No one in the assembly, be it little or big, knows better than he does that to show annoyance in the slightest degree would be a breach of courtesy to the audience.

Having taken the helm at many hundreds of trips round the world, and **through the heavens,** and under deep waters, and so on *ad lib.*, I have come to the conclusion that where practicable the lantern and operator should be hidden from view. It is impossible to do this in every place, but it can be done in most by the use of curtains; and if attendants would only help the operator in providing for the latter's comfort they will be doing good service.

Practical operators have a good look behind them before the lights go down, and by so doing sometimes remove a source of obstruction in too close proximity to a *better seat in front.* No operator, however, can avoid the ray of light flashing on to the pair of lovers snugly seated over by the wall, if perchance he should open a door of a lantern whilst the exhibition is proceeding. But the old gentleman, slightly deaf, and who snores rather loudly, is soon awakened by his nearest neighbour, and invariably goes out.

Juvenile precocity, I maintain, is a vice, and one of the worst of vices that we operators have to contend with. Only a few evenings back a man threatened to sit on a child if he didn't, to use his own words, "shut up."

A running commentary was being indulged in by mother and child, principally bearing on my qualifications. "What are those gutta-percha pipes for?" said the child. "The gas pipes of the lantern," replied mother. "What's he want gas pipes in a lantern for?" "Oh! to—to—burn the gas to give the light." "What light?" "The light in the lantern that lights up the picture." "What picture?" "The picture he'll show us presently on the sheet." "What sheet?" "That sheet in front." "What's it in front for?" "Be quiet." "What for?" "Because you're a nuisance." "Why don't he turn on the picture?" "Oh! bother." "What's a bother?" "You are." "Why don't he turn on the picture?" And yet we operators are told to "keep cool."

Negatives for Enlargements and Lantern Slides.

By E. DUNMORE.

NEGATIVES for enlargements or lantern slides require to be of a somewhat different character to those used for ordinary positive printing. The idea, frequently held, that a good slide or enlargement can be made equally well from any good negative is quite wrong. Some kind of result can be had from any negative there is no doubt, but as to its being of the highest standard of quality is equally erroneous. We must make up our minds that if we mean to have the most satisfactory results, we must prepare special negatives adopted for the purpose. This being allowed, what are the special characteristics of good negatives for enlargement?

A negative for enlargement and one for lantern transparency must not be confounded with each other, although practically both are for enlargement; one is direct and one secondarily so through the medium of a glass positive. For enlargement direct, such as on bromide paper, negatives should be thin and full of detail with no very dense lights, the necessary pluck being obtained by judicious exposure and development. If an ordinary brilliant negative suitable for contact printing was used the results would be more or less unsatisfactory, hard, and deficient in detail, although with care, born of experience, very passable results may be made. Still, for choice, such a negative is not to be selected for this particular purpose as giving a minimum of trouble and a maximum of softness and brilliant qualities, which should be the aim of the worker.

The best kind of negative for enlargement would not print a good contact positive on the usual papers with any amount of coaxing, and as to getting a number of proofs of equal strength and colour it would tax the patience of the most expert printer, and involve the waste of much material. A fully exposed thin negative, rather inclined to flatness, seems to generally make the best enlargement. If the negative is a wet collodion one, there should be more or less deposit over the whole of the plate, not a single atom of clear glass should be visible; but with gelatine the very deepest points of shadow should be free from deposit, for a very little fog on a gelatine film has much more obstructive power than on a collodion one. The negative should be a clear negative.

With regard to the term clear, there seems to be some misapprehension. A clear image must not be understood to mean an under-exposed one, a mistake that is frequently fallen into with many workers. A clear image and clear glass are not synonymous. The **requisite clearness** means that no other deposit than that forming the image shall exist, a condition we judge of by seeing that only the very deepest points of shadow are very free from veil. No matter how dense or thin an image may be, if this condition obtains it may be considered a clear negative and not over-exposed. But if no clear points exist it may be safely concluded that either the plate is over-exposed, or that it is fogged and unsuitable for enlargement. The nearest we can get to this full exposure without fog the better, so that every part contains detail. As a rule a negative so exposed will possess good gradation without excessive density—just the result we desire. A negative of this quality, although unsuitable for direct printing, can easily be intensified for the purpose, if desired, after enlargements have been made, and be at the same time a negative of the best quality.

With regard to density or intensity, it may be as well to make a few remarks, as also to the term opacity, which word has a somewhat elastic significance, as it must be always understood with regard to the colour of the image, opacity on one negative need not be opacity on another. For this reason we may term that portion of the negative opaque; that will prevent any but the slightest action of light on the sensitive surface in the time that the rest of the negative is sufficiently printed, and this, of course, varies with the general density of the image. What may be opacity on one may permit quite a strong tint printing in another, and *vice versâ*.

The colour of the image being, as I have said, an important factor in the matter, the yellow tint of a pyro-soda developed negative is much more obstructive to light than the apparently denser image formed by hydrokinone and developers of this class. A very little alteration in the colour will make considerable difference in the printing qualities, much more than might be expected from the appearance. This must be taken into consideration in "doctoring" a negative, the lightest pencil mark showing distinctly on one, while a dense patch of black varnish would scarcely be perceived on the other. In copying line engravings for lantern slides, the density of the negative, so long as it is sufficiently so, is not of much consequence, as no **half tones** have to be considered; the *cliché* must be clear and clean black and white. It is usual to dissolve out any veil from the lines, and intensify in a manner altogether out of the question if any half tones existed, and it is the only kind of negative where absolutely clear glass is a positive advantage. Most enlargers prefer negatives that, whilst giving sufficient contrast, will occupy but a short time in exposure. Long exposures are apt to give unnecessary trouble in a variety of ways and lead to waste of material and time, so the thinner the negative that has sufficient contrast is best liked.

For making lantern slides the negative should not be quite so fully exposed as for enlargements, but not by any means underdone. There should be good printing detail in the shadows, and rather more pluck in the image generally without a shadow of hardness. With a negative of this sort excellent transparencies can be printed. The exposure and development of the transparency is even of more importance than that of the negative. There must be a certain amount of absolutely clear glass, more than in the negative. The least deposit in the highest lights is fatal to brilliancy, except when exhibited with the most powerful illuminants; even then clearness is a great advantage on this account. Transparencies are treated after development to a clearing solution which will remove any trace of deposit from those parts that are required to show as clear glass, without in any way interfering with the shadow detail. Formerly hard black and white positives with no detail in the shadows were preferred for lantern slides, chiefly, I believe, because the illuminants used in the lanterns were much less powerful and penetrating than those of the present time, when compressed gas, electricity, and acetylene are generally used. Such slides are now considered crude and unsatisfactory by the more cultivated tastes of the present day. Brilliancy there must be, but without harshness; so the brighter and softer the picture is, the better is it appreciated.

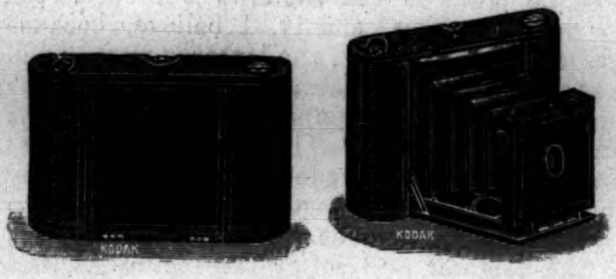
NEW APPARATUS.

YORK AND SON'S NEW SLIDES.

In the 30th Annual Supplemental Catalogue of Slides issued by Messrs. York and Son, we find the following sets, taken from recent negatives:—Cairo and the Nile, 60 slides; Life and Scenes in Palestine, 60; Jerusalem, 40; Shakespeare's Avon, 50; Berlin and Dresden series, 79; 30 slides on Human Vision; Sicily, 50; In the Footsteps of Cromwell, 50; 15 new sets of life model slides are enumerated; 22 new views in connection with Kensington Palace have been added to the already long list of slides. Several new illustrations for songs are also to be found in the list, including:—The Lost Chord, Angel's Promise, Ben Bolt, Coming thro' the Rye, Star of Bethlehem; also several illustrations for hymns. The quality of Messrs. York's slides needs no comment, for, as is well known, it is always of the best.

NO. 2 FOLDING POCKET KODAK.

Kodak, Limited, are always adding to their list of novelties in the way of photographic apparatus, the latest being what is known as their No. 2 Folding Pocket Kodak. In principle it is not unlike their earlier form of folding pocket kodak, but is a little thinner although the pictures taken by it are larger, viz., 3½ × 3½ inches. The camera carries a spool of film for twelve exposures, and the extending front and bellows fold up between the rolling and unrolling spools so that when closed up the apparatus is only 1½ inches thick, and the total weight being only one pound it is a simple matter to carry one in an ordinary coat pocket. The camera is provided with an ever-set shutter, and both time and instantaneous releases and also a view finder. We give illustrations of the apparatus both open and closed.



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Correspondence.

CALCIUM CARBIDE RESIDUES.

To Mr. J. Hay Taylor, Editor.

Dear Sir,—In the July number of the Optical Magic Lantern Journal, under the heading of "For Acetylene Users," there appears a statement, attributed to Professor Vivian B. Lewes, which is likely to cause considerable misgiving in the minds of generator owners and users. The paragraph is on page 84, and reads as follows:—"With a very bad generator in which great heating occurs, the residue will consist of black carbon and white lime, while the yield of gas will be . . . in some cases only half the proper quantity."

Now, if this is correct, there is not a single generator in use that will not have to come under the heading of very bad at some time or other. I was present during the greater part of the time that the Acetylene Exhibition was in progress, and certainly saw black and white residue at some time taken from every generator. The cause of this black residue, I may say, is not the generator or system of generation, but is due entirely to the carbide itself; most likely being caused by outer crust or improperly fused material. To give you an opportunity of proving this, I am sending per G.W.R. a tin marked A, which is almost certain to produce a black and white residue, however decomposed; and a tin marked B, which will decompose into an almost (if not quite) white residue entirely free from black. I am also sending three tins of residue from B carbide—one tin containing a shovel full from the residue tub; another, residue taken from the bottom cage of a generator in action; and the third, residue and carbide from one of our lantern generators, which had been used with four Bray's 00000 burners, and therefore evolved very great heat in action.

Please note that if the carbide as per tin A be used in any of the generators from which this residue is taken, there is nearly always a proportion of black lumps, or slime in the same chambers as the white, but never any trace of brown or yellow with either carbide. I would ask: "Is it possible for generators to attain a temperature of 800 centigrade, which is necessary to produce this black residue, and yet show no trace of the action which we know results from a temperature of 500 to 800, viz., yellow or brown in the residue, and further to fail in altering in the slightest degree pencils of block tin which melts at 228 centigrade."

I have even gone further than this, and constructed a non-automatic decomposer, the gas passing into a holder with a pressure of less than 1 inch; the action being as slow as possible, yet no apparent heat was discernible on the case in which the action took place, and yet with A carbide there was black. I may say that this opinion is shared by most of the makers of generators with whom I am personally acquainted; therefore I can assure users that they need not discard their apparatus on the ground of black and white residue, but at the same time I would advise them to be very careful if the yellow is constantly appearing, and either use the apparatus with a smaller charge or fewer burners.

Allow me to add that these remarks apply not to any particular generator, but to the general run, the foregoing test having been made in several patterns and makes.

Thanking you in anticipation,

Yours sincerely,
R. I. MOSS,
Abingdon Acetylene Illuminating Co.

[We have experimented with the samples of carbide sent, and found under all the conditions tried that the A carbide gives a black and white residue, whilst that from the B carbide leaves an almost pure white residue. —Ed.]

FACTS CONCERNING LIME CYLINDER MAKING.

To Mr. J. Hay Taylor, Editor.

Dear Sir,—To the great number of lanternists, both amateur and professional, who are constantly using limes, the frequent question naturally arises, "Why are limes so costly and unreliable?" when all that is required for their production is a cask of hard white lime from the nearest burner, cut up in cubes, a hole drilled through the centre, and turned on an ordinary lathe with suitable chucks, etc., to the required diameter, thereby securing a large supply for the lanternist's own use, and if he thinks well can also supply the trade, and all this accomplished at such a wonderfully cheap rate. The experienced manufacturer of years' standing when approached by these energetic would-be makers, and told how they will cut his prices down, simply smiles and tells them to get some lime and try, and with confidence he can do so, knowing full well the difficulty they would experience. Keeping in mind the article upon this subject in last issue, the writer, being a retired manufacturer, thinks a few words of advice to those whose queries on this subject so often appear in this and other journals, will be received with interest.

In the first place the lime is the all important factor, the price paid for it, and the railway rates of its carriage. The next item is the kind of machinery employed, and the speed with which cylinders can be produced, and various other important matters. The particular lime necessary for the purpose being of a peculiar and refractory character, and far from plentiful compared with other kinds, the known quarries from which it is obtainable can be counted upon the fingers (although there are thousands of others which to the inexperienced would do equally as well), and with the exception of one or two, are secured under contract, or agreement for a term of years to existing and well-known makers, one maker alone having, I am given to understand, three quarries under his control. Under these circumstances an outsider not having the means of securing a supply, would find great difficulty in obtaining such, and the writer knows of cases where the repeated applications to the burners have been systematically ignored, and in other instances the prices quoted were so excessive that the intending purchaser could not possibly entertain matters; of course all this is purposely done. Nevertheless, this lime of a high grade is a very expensive material, owing to the time expended on its selection, dressing, etc., and sometimes runs up to several pounds per ton, the railway and canal rates to London being from 20s. to 50s. per ton, add to this on an average of two-thirds waste in working and other causes, and it will be found that there is not much left out of a £10 note. If the lime cannot be worked up very rapidly, special steel casks or tanks would have to be provided for storage; the paraffin casks are continually shrinking, and admit air, which destroys the lime.

As regards machinery for cutting the lime, the writer has tried circular, band, frame, and horizontal saws, and found nothing in the long run so economical as a handsaw, for with this a stop can be made instantly a hard substance is felt.

In conclusion, a lime cylinder business is a more extensive and complicated affair than it at first appears, and I would not advise any one who is not thoroughly conversant with the trade to take up the manufacture for a living, for unless he has purchased or secured a lime supply of a quality superior to any now on the market he would stand very little chance of success, and to establish a paying trade would require several hundred pounds. Even then there is a possibility of loss, as there is the summer season of four or five months when little or no business is done, and expenses such as rent, wages, lime account, railway account, making of stock, etc., still going on. Again, suitable men are difficult to get, and when got difficult to keep, and if men are stopped work for four or five months they will seek other work, and the same process has to be gone over again instructing fresh men, so you might conclude during this time nearly all is going out and next to nothing coming in. It is thus evident that capital is required to stand against all this.

Yours truly,
A RETIRED MANUFACTURER.

To Mr. J. Hay Taylor, Editor.

Dear Sir,—I have to thank you for publishing the article on making limes, and although I am not the party who asked the question I have found it particularly handy, as doubtless other readers have. In the course of testing apparatus I am continually using limelight for a few minutes at a time. On reading the article I went to a neighbour and bought a few copper's worth of lime, and instead of making two chucks as spoken of, I used the drill and holder in my American Universal Chuck, and within a few minutes made a number of limes, and these I have been using daily since in the course of my testing, and find them admirable for my purpose. Again thanking you.

Yours truly,
GRATEFUL.

PATENT INTELLIGENCE.

The following List, relating to current Patent Applications, is compiled expressly for the "Optical Magic Lantern Journal" by W. P. Thompson & Co., Patent Agents, of 322, High Holborn, London, W.C., to whom all enquiries for further information should be addressed.

No.	Recent Patent Applications.
12416.	14th June, 1899. William Phillips Thompson (Maxime Radais and Maurice Strassnie, France). Improvements in diaphragms or stops with variable apertures for objectives applicable for photography and the projection of pictures.
12497.	15th June, 1899. Roland Hugh Edwards. New or improved method and means of changing (either rapidly or otherwise) the sensitive surfaces in taking photographs, or for displaying the views in rapid succession in animated photography or the like.
12511.	15th June, 1899. Charles Denton Abel. Improvements in the means and apparatus for reproducing animated scenes by projection on to screens or surfaces. (Société Internationale d'Etudes Industrielles, France.)
12515.	15th June, 1899. Gustav Selle. Improvements in the manufacture of selective colour light filters for photo optical purposes.
12835.	20th June, 1899. William Stevens and Winfield Scott Bell. Improvements in and relating to stop mechanism for photographic cameras, projectors, and the like. Complete.
13310.	27th June, 1899. Henry Talbot. Improvements in lanterns for incandescent gas lighting.
13369.	28th June, 1899. Ernest Edward Bartlett. Improvements relating to cinematograph apparatus.
13370.	28th June, 1899. Ernest Edward Bartlett. Improvements relating to cinematograph apparatus.
13421.	28th June, 1899. Ernst Malke. Improved means for simultaneously operating animated pictures and a phonograph or gramophone. Complete.
13422.	28th June, 1899. Ernst Malke. Improved means for illuminating animated pictures. Complete.
13666.	July 1st, 1899. Gustav Selle. Improvements in the method of and means for producing images in complementary colours, suitable also for use in taking, projecting, inspecting, testing, or combining three colour photographs, prints, or the like.
13903.	July 5th, 1899. Charles Raleigh. An improved method of and apparatus for conducting certain photographic operations principally applicable in connection with animated photography.
14406.	July 12th, 1899. Guido Kühn. Improvements in telescopes. Complete.
14548.	July 14th, 1899. Charles Harris Shaw. Improvements in panoramic cameras. (Date applied for under Patents, etc., Act, 1883, Sec 103, December 16th, 1898, being date of application in United States.)

14672. 17th July, 1899. Ernest Abbe. Improvements in devices for observing or reproducing the images projected by optical lens systems.

15096. 22nd July, 1899. Alfred Moore Barnes and Edward Cowper. Improvements in animated photography, and in apparatus connected therewith.

15372. 26th July, 1899. Moritz Barth. Improvements in apparatus for displaying moving pictures or advertisements. (Complete.)

15480. 27th July, 1899. Cecil Wray. Improvements in coin-freed apparatus for exhibiting series of photographs.

15605. 31st July, 1899. Walter Thomson and the Jactho Patent Automatic Advertising Lamp Company. Improvements in stereoscopic apparatus.

15681. 1st August, 1899. William Charles Louis Holland and William Pitt Roberts. Improvements in animated picture machines.

15753. 1st August, 1899. Alfred Julius Boult. Improvements in or relating to the production and exhibition of photographic representations in natural colours. (Louis Ducos du Hauron, France.)

15967. 4th August, 1899. Leo Kamm. Improvements in electric arc projecting lanterns.

16326. 10th August, 1899. Ernst Malke. Improvements in or applicable to apparatus for exhibiting living pictures.

16327. 10th August, 1899. Ernst Malke. Improvements in coin-freed apparatus for exhibiting living pictures. (Complete.)

SPECIFICATIONS PUBLISHED.

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

14965 of 1898. Newman and Newman and Guardia, Limited. Machinery or apparatus for punching the holes in photographic films for kinematographs and the like.

3548 of 1899. Aisbitt, Miller, and Jones. Oil lamps or lanterns.

14469 of 1898. Cohen. Graphoscopes and stereoscopes.

16959 of 1898. Boult (Goldschmidt). Method of producing photographic pictures.

17831 of 1898. Prestwich. Apparatus for animated photography and optical projection.

10773 of 1899. Borsch. Bifocal lenses.

5956 of 1899. Bloch. Production of changing or transformation pictures.

18875 of 1898. White. Apparatus for producing and exhibiting colour photographs.

10290 of 1890. Hill. Tubular lanterns.

8246 of 1898. Barr. Apparatus for displaying photographs of moving objects.

12835 of 1899. Stevens and Bell. Stop mechanism for photographic cameras, projectors and the like.

4601 of 1899. Wood. Production of coloured photographs, and apparatus for viewing the same.

16812 of 1899. Mills (Lumière & Lumière). Means or apparatus for obtaining and projecting chromo-photographic images.

20660 of 1899. Errera. Production of slides for optical lanterns.

Notes and Queries.

Henry Fenwick.—(1) The same jet is capable of giving more or less candle-power according to the pressure of gas used. (2) The more oxygen you use must be accompanied with a corresponding increase of hydrogen. (3) We make no charge for advice. In future please address the Editor and not the Company on all matters pertaining to the literary matter of the Journal.

Oil.—Thin glass is much superior to talc for the front glass of the oil lamp. Talc invariably becomes of a yellow colour, which obstructs a good deal of light. If you cannot readily obtain the thin glass (microscopic) from a lantern dealer near you, you can obtain same from Messrs. Houghton & Son, of Holborn, London.

Annoyed explains that he has lately painted the inside of his lens tubes with black Aspinall's enamel, but finds the shine very annoying, and asks what is best to do? *Ans.*—Remove the enamel with (say) turpentine, and coat with dull black paint instead; this can be procured from almost any photographic dealer, or can be made with gold-size and lamp black thoroughly mixed; this however may be found to be too thick and can be thinned with turpentine.

Spoilt Glass writes:—I lately had occasion to give a few demonstrations in connection with acetylene gas, and so as to allow my class to see what was going on during the generation of the acetylene I used a special shaped glass receptacle which I had as a species of generator. I now find that the carbide has injured the glass for I cannot wash it all out, the glass being left with a creamy look. I may say the particular glass vessel is valuable and although I have tried to wash it out with everything I can think of, it still remains about the same. Can you or any reader assist me to get the glass clean again? *Ans.*—Rinse the glass with nitric acid and it will become as clean as new.

F. Abbott Smith.—With your saturator working in good order and fully charged you should be able to turn off the direct oxygen and leave a flame not unlike ordinary house gas, but if when turning off the direct oxygen the lime is still luminous it denotes that the oxygen passing through the saturator is not sufficiently charged with the ether vapour.

George Gaunt asks how to stop the hissing of his mixed limelight jet. *Ans.*—This is a somewhat tall order, as it may arise from so many causes. Try cleaning the inside thoroughly, and if this gives no improvement substitute a new nipple for the old one. Perhaps you are using extreme pressure.

Operator.—Mr. Pringle's book is published by Hampton and Co., 13, Cursitor Street, London, W.C.

Thos. Morrison writes:—Can you kindly give me particulars as to where the best lime is to be obtained for making limelight cylinders; I mean that used by the best manufacturers? *Ans.*—Yes, we can, but we will not; seeing that many persons have devoted both time and money in order to find that which proves most suitable, and this is considered a trade secret.

D.—The firm you speak of has been out of existence for twenty years at least.